A NEW, DISJUNCT VARIETY OF *SPIGELIA GENTIANOIDES* (LOGANIACEAE) FROM BIBB COUNTY, ALABAMA

KATHERINE GOULD

Department of Botany
The University of Texas at Austin
Austin, TX 78713, U.S.A.

ABSTRACT

A new variety of an endangered plant species, *Spigelia gentianiodes* (Loganiaceae), is described. The new variety, differing largely in quantitative features, comprises a group of recently discovered populations in central Alabama, well disjunct from the type variety of central Florida. The new populations are localized to a rare glade community of Ketona dolomite on the Little Cahaba River and contain greater numbers of individuals than any of the Florida populations.

KEY WORDS: *Spigelia*, *Spigelia gentianoides*, Loganiaceae, disjunct, Alabama, endangered species

RESUMEN

Se describe una nueva variedad de una especie vegetal en peligro, *Spigelia gentianoides* (Loganiaceae). La nueva variedad comprende unas poblaciones descubiertas en el centro del estado de Alabama, separadas geográficamente de la variedad típica, que está restringida al estado de Florida. Las nuevas poblaciones se localizan en una comunidad tipo "glade," con abundancia de rocas dolomíticas de la formación Ketona, en el río Little Cahaba. Esta población contiene muchos más individuos que cualquier población de Florida.

A new, disjunct group of populations of the Federally Endangered *Spigelia gentianoides* (Loganiaceae) was discovered in 1992 by James R. Allison of the Georgia Natural Heritage Program, Georgia Department of Natural Resources, while exploring the Little Cahaba River in Bibb County, central Alabama. This *Spigelia* species was previously known only from several counties in the Florida panhandle, where it is believed to be near extinction from habitat loss (Kral 1983; Rogers 1986; A. Gholson, pers. comm.).

The Alabamian *Spigelia gentianoides* is found in association with many other rare plants, new species and new varieties of plants in a unique dolomitic glade community known as the Ketona Glades, which encompasses over 40 outcrops of Upper Cambrian dolomite (Allison 1994a, 1994b). These populations are not only geographically isolated from the Florida populations, but their individuals also exhibit trait differences that signify

SIDA 17(2): 417–421. 1996

genetic differentiation from the Florida plants. Thus the Alabama populations of *Spigelia gentianoides* are here described as a new variety.

Spigelia gentianoides Chapman ex A. DC. var. **alabamensis** K. Gould, var. nov. (Fig. 1)

Similis *Spigeliae gentianoidi* var. *gentianoides* sea floribus majoribus, lobis corollarum patulis per anthesin, sepalis longioribus, cymis plerumque brevioribus, foliis lanceolatis aut ellipticis.

Perennial herb to 25 cm tall. Stems usually several from the underground rhizome, or of one main stem branching near the base, quadrangular, glabrous except at the nodes and ribs just below the nodes where scabrous. Interpetiolar stipules minute, membranaceous. *Leaves* opposite, none in pseudowhorls below the inflorescence, sessile, *mostly lanceolate to elliptic*, occasionally ovate to obovate, the mid-stem leaves 2.8–3.5 cm long, 0.8–1.9 cm wide, longer than the internodes, the upper bracteate leaves smaller, 1.6–1.9 cm long, 0.4–0.5 cm wide, the lowermost cauline leaves more orbicular and smaller; the blades mostly acute to acuminate at the apex, cuneate to rounded at the base, coriaceous, scarcely scabrous above, scabrous on the margins and veins beneath. *Inflorescence a terminal 2–4(–6) flowered cyme*, the peduncles 1–4 mm long, the bracts subulate, glabrous, 3 mm long, the pedicels 2 mm long. Flowers 5-merous; *sepals* subulate, tending to be of unequal length, *8–11 mm long at anthesis, accrescent to 12 mm long* and exceeding the mature capsule at maturity, the tips acute, the margins and midvein scabrous; *corolla broadly funnelform* with plicate lobes, fleshy, light pink outside with a green tinge at the base of the tube, two darker pink vertical lines on each lobe, lighter pink to white inside, *36–50 mm long*, *the throat 8–15 mm wide*, the free portion of the lobes ovate, acute, *12–13 mm long*, with scabrous margins, *the lobes spreading open at anthesis*; stamens and style included; stamens epipetalous, borne 12–16 mm above the corolla base, the free filament 2 mm long, projecting inwards, the anthers 2–3 mm long, connivent around the style 1–2 mm below the stigmatic surface and dehiscing onto the pubescent portion of the style; pistil 24–27 mm long, the ovary globose, 1–2 mm long, green, glabrous, the style white to yellow, slender, 23–25 mm long, pubescent along the upper 6–9 mm, articulated 5–6 mm above the ovary, the stigma terminal, truncate to rounded, yellow, pubescent, less than 1 mm wide. Capsule bilobed, slightly crested on the top, glabrous, green, 8 mm high, 6 mm wide, the persistent style segment erect, dark brown, 5–6 mm long, the persistent, subtending fruit base white, 6 mm long with emarginate tips.

TYPE: ALABAMA. BIBB CO.: large Ketona dolomite glade on hillside above the Little Cahaba River from County Road 65, off Hwy. 25, 30 May 1996, *Katherine Gould 145* with Sheryl Gould (HOLOTYPE: TEX; ISOTYPES: FLAS, FSU, GA, GH, UNA).

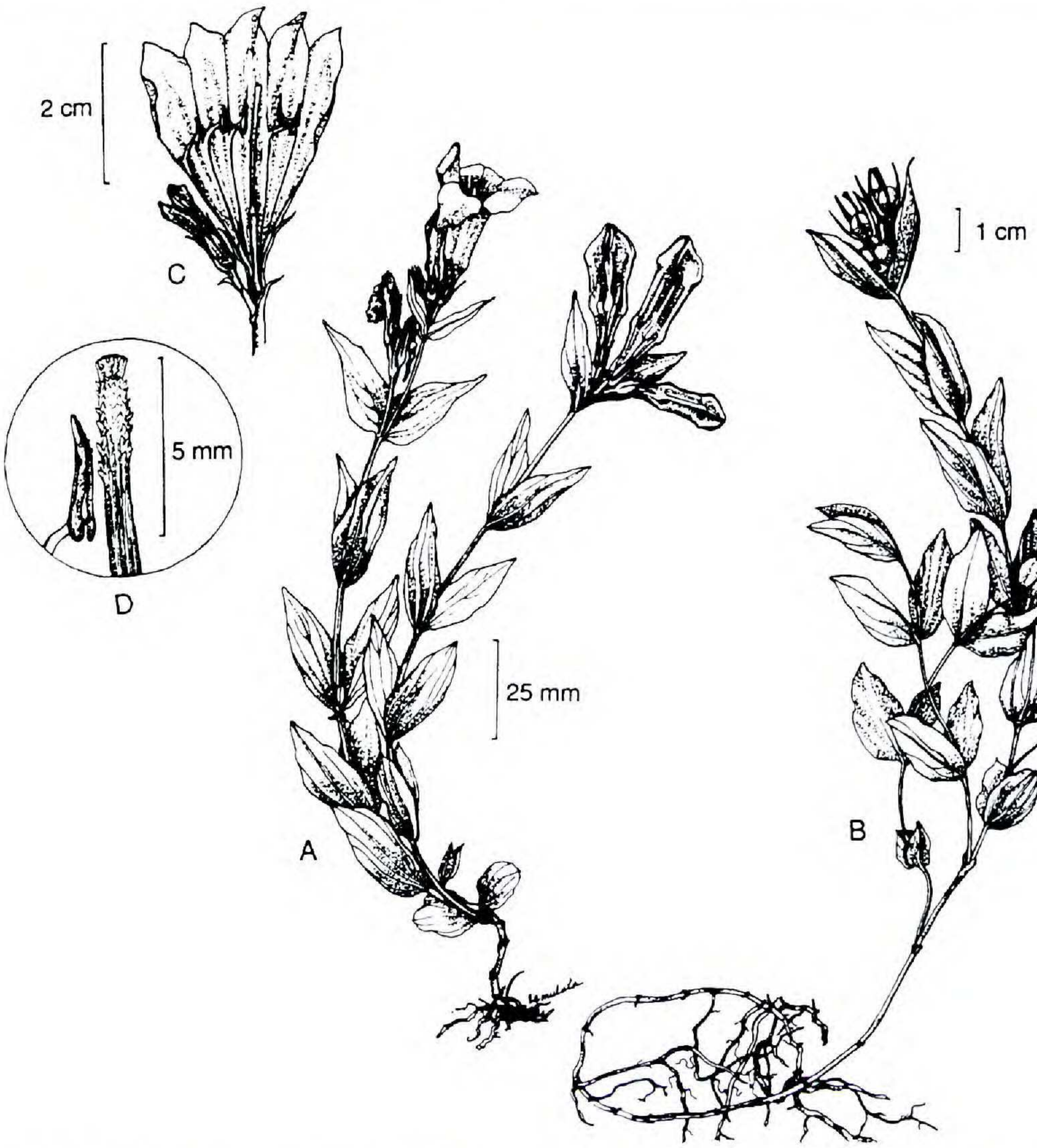

FIG. 1. A. *Spigelia gentianoides* var. *alabamensis*, habit, flowering plant. B. fruiting plant. C. mature flower, corolla cut open longitudinally to reveal stamens and pistil. D. upper portion of style and stigma showing relative anther position.

Additional specimens examined: Bibb Co.: N & E of Centreville [sic], dry, shallow soil accumulations on limestone outcrop, 1 Jun 1992, *Allison 6688*; Co. Rd. 65, 0.6 mi NW of Little Cahaba R[iver] bridge at Bull Dog Bend, 0.25 mi S on dirt road to river, 0.2 mi downstream, 33°03'33"N, 87°02'10"W, elev. 280 ft, 11 Jun 1995, *Ginzbarg 990* (UNA).

The most obvious difference between the two varieties is flower size: *Spigelia gentianoides* var. *alabamensis* has consistently longer corollas (36–50 mm vs. 25–30 mm) with broader throats (8–15 mm vs. 7–8 mm), longer lobes (12–13 mm vs. 5–7 mm), longer pistils (24–27 mm vs. 17–19 mm), and longer sepals (8–11 mm vs. 4–6 mm). Furthermore, var. *alabamensis* generally produces shorter inflorescences than var. *gentianoides* (2–4 flowers vs. 3–8). The overall appearance of the flowers in the two taxa is the same, except that the flowers of var. *gentianoides* barely open when mature, thus

appearing cleistogamous, while the flowers of var. *alabamensis* open fully at maturity, with their corolla lobes reflexing.

Leaf shape, though variable, tends to differ between the two populations: var. *gentianoides* has leaves that are more broadly ovate with rounded bases, whereas var. *alabamensis* produces leaves that are more lanceolate to elliptic, less frequently narrowly ovate, ovate or obovate, and with cuneate to rounded bases. Overall stem leaf size is the same between the two varieties.

Other qualitative and quantitative traits differing between the two varieties *in situ*, such as plant height, internode length, branching frequency, leaf and stem texture and leaf orientation, may be induced by environmental conditions, such as degree of sun exposure and differences in soil composition. The var. *alabamensis* occurs in an open, glade habitat in shallow, gravelly soil, where it often grows in low clumps. It generally has a compact, leathery habit with short internodes and ascending leaves with the leaf margins curling upwards. In contrast, var. *gentianoides* is usually found under the shade of a pine/mixed hardwood canopy or pine monoculture in humous- or duff-covered soil. In this environment it generally has one thin, weak stem with elongate internodes and thin, outspread leaves. However, the var. *gentianoides* takes on the former habit when grown in full sun and sandy soil, as it does at Bok Tower Gardens' Endangered Plant Program in Lake Wales, Florida.

Populations of *Spigelia gentianoides* var. *alabamensis* are much larger in extent and number of individuals than the present-day populations of var. *gentianoides*, with some glades containing thousands of individuals. However, the new variety appears to be entirely localized to these rare glade communities, and should therefore be considered a rare plant in need of protection.

ACKNOWLEDGMENTS

I am grateful to James Allison for calling the new *Spigelia* populations to my attention and providing feedback on this description, James Affolter for his personal observations and helpful comments, Angus Gholson for his field assistance in Florida, Steven Ginzbarg for providing plant material, Tammera Race for access to the Endangered Plant garden at Bok Tower Gardens and providing plant material, Billie L. Turner for academic advising and editing, Gayle Turner for the Latin diagnosis, and an anonymous reviewer for comments on the manuscript.

REFERENCES

ALLISON, J.R. 1994a. A botanical "lost world" in central Alabama. In: J.S. Fralish, R.C. Anderson, J.E. Ebinger & R. Szafoni. Proceedings of the North American conference on barrens and savannas. Illinois State University: Normal, IL. Pp. 323–327.

_____. 1994b. A "lost world" in Bibb County, Alabama. Panga 4:1–5.

KRAL, R. 1983. Loganiaceae. In: A report on some rare, threatened, or endangered forest-related vascular plants of the South. USDA Forest Service, Southern Region, Tech. Publ. R8-TP2, Vol. 2, pp. 877–880.

ROGERS, G.K. 1986. The genera of Loganiaceae in the southeastern United States. J. Arnold Arbor. 67:143–185.